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Avicennia alba Blume

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Avicennia alba Blume

Taxonomy and nomenclature

Family: Avicenniaceae (formerly placed in Verbenaceae)

Synonyms: *Avicennia marina* (Forsk.) Vierh. var. alba (Blume) Bakh., *Avicennia officinalis* L. var *alba* (Blume) Hook ex Jafri, *Avicennia spicata* Kunth.

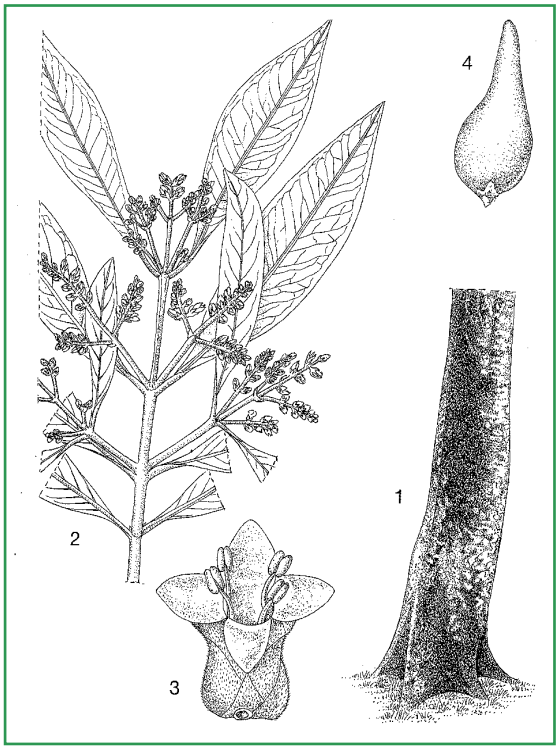
Vernacular/common names: api api hitam, api api puteh (Malaysia); mam trang (Vietnam), samae khao (Thailand).

The genus contains 8 species which are distributed in coastal mangroves throughout the tropics.

Taxonomically related to the family Verbenaceae, which contains several important timber species e.g. *Tectona*, *Gmelina* and *Vitex*.

Distribution and habitat

Occurs in coastal mangroves of western and eastern India, Sri Lanka, Myanmar, Indochina, Thailand, Malaysia, Indonesia (including Borneo), Philippines (except north) to Solomon Islands. *Avicennia* occurs in the outer mangroves along the shores of tidal rivers and often found as pioneers on exposed mangrove land or after other mangrove species have been cut.



1, bole; 2, flowering twig; 3, flower; 4, fruit. From: PROSEA 5(3)

Uses

The species has a moderately hard wood, which has an all-round use, e.g. as construction, poles, posts, furniture, boat building and for decorative purposes. It is considered a poor firewood but is occasionally used for charcoal. The resin is used for various medical purposes.

Botanical description

Trees or shrubs, exceptionally to 30 m tall but usually much smaller. Bole often crooked, no buttresses, small aerial roots and numerous phenumatophores (aerial roots). Bark brown (black when wet), smooth or shallowly fissured. Twigs usually swollen towards the nodes. Leaves opposite, simple, margin entire, ovate with rounded apex; shiny dark green above, white waxy below (ref. 'alba' = white). Inflorescence a terminal or axilary cross-shaped spike. Flowers yellow, 4-merous, small and sessile. Calyx enclosed by bracts.

Fruit and seed description

Fruit: two-valved nut, leathery, with the sprout looking like a beak on the fruit. Each fruit contains 1 seed. There are about 175 propagules per kg.

Seed: the seed handling unit is the viviparous propagule, which is the germinated seed enclosed in the fruit wall.

Flowering and fruiting habit

The flower is hermaphroditic. Flowers and fruits can be found most of the year in particular in equatorial areas, but there is usually a pronounced peak flowering and fruiting. In Mekong Delta in Vietnam fruit collection is from mid August to mid October, but some fruits can be found into early November.

Harvest

The seeds reach mature size about two weeks before full maturity. Mature fruits change colour from green to greenish yellow. Seeds can be collected from the river water, where they will float for some time, or they can be collected from the trees by climbing. Harvest from the trees is preferred to avoid quick germination. Early harvest can also prevent fruits being attacked by moth larvae. Fruits that are visibly attacked should not be collected.

Processing and handling

Fresh fruits typically have a moisture content of about 60%. Prevention of desiccation is crucial during handling and will only tolerate drying to about 45%. Seeds are not extracted.

Storage and viability

Recalcitrant with precocious germination. Best storage conditions has been found for fruit or seeds dried to about 45% moisture content and stored in sand. The moisture content of the sand should not be less than 10%. A storage temperature of 17°C was slightly better than 28°C. Fruits store better than seed. After 4 months storage at 17°C, germination had declined from 95% to 75%. 10°C killed the seeds under any storage conditions. Even at these optimal storage conditions some seeds usually start germination (radicle formation), but the germination speed can be reduced by the relatively cool conditions of 17°C.

Dormancy and pretreatment

There is no dormancy in *Avicennia* seed, but the seeds are normally sown with fruit cover removed, because the fruit cover is highly susceptible to fungus attack.

Sowing and germination

Fresh seeds often have very high germination, typically >95%. Sown imbibed seed will usually have radicle formation within 3 days from sowing. Germination is epigeal with cotyledons emergent. Radicle with hairs developing into secundary roots.

Avicennia alba. Photo: www.forestry.sarawak.gov.my/

Phytosanitary problems

Young propagules are consumed by crabs. Germinating seeds sown together with the fruit cover are frequently subject to fungal attack. Fruits and seed are often infested and destroyed by *Avicennia* seed moth '*Autoba alba*'. The larva bores into mature fruits and webs it to branchlets, thus preventing it from falling at maturity. Each larva can destroy up to 8 fruits by feeding before it pupates in the last one.

Vegetative propagation

Root suckers can be used as vegetative propagules.

Selected readings

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